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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,143	10/27/2003	Huitao Luo	200310055-1	3278

22879 7590 05/03/2007  
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FORT COLLINS, CO 80527-2400

EXAMINER
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BALI, VIKKRAM

ART UNIT	PAPER NUMBER
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2624

MAIL DATE	DELIVERY MODE
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05/03/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/694,143

Applicant(s)

LUO, HUITAO

Examiner

Vikkram Bali

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/27/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 claims target object region which is based on a first set of features and the quality feature vector is based on a second set of features and the first and second are different. But, the image quality feature vector represents the target object region as claimed in claim 1, these two limitations contradict each other and therefore, makes the claim indefinite.

Claim 7 is rejected by virtue of its dependency.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 8 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luo (US 7068841).

With respect to claim 1, Luo discloses detecting a target object region in an input image, (see figure 2, 200); and mapping the image quality feature vector to a measure of image quality, (see col. 6, lines 59-62) as claimed. However, he fails to explicitly disclose generating an image quality feature vector representing the target object in an image quality feature space, as claimed. But, in col. 6, lines 33-36, it states that average face region lightness is determined, i.e. "feature vector representing the target object" is generated. Therefore, it would have been obvious to one ordinary skilled in the art at the time of invention to simply use the determination of average face region lightness as the feature vector in order to measure the image quality, as mapped by the reference in col. 6, lines 59-62 for motivation.

With respect to claim 2, he further discloses a human face, (see col. 6, lines 11-12) as claimed.

With respect to claim 3, he further discloses target object region corresponds to an object relevant to a person (see col. 6, lines 11-12, the human face) as claimed.

With respect to claim 4, he further discloses target region is detected based on a sub sampled version of the input image, (see col. 6, lines 11-13, the human face from the image is located "the sub sampled version" of the entire image) as claimed.

With respect to claim 5, he further discloses image quality feature vector is generated based on a version of the target object region at a resolution of the input image, (see col. 9, lines 16-21) as claimed.

With respect to claim 8, he further discloses image quality feature space is brightness feature describing a respective brightness characteristic (see col. 6, lines 33-36) as claimed.

With respect to claims 15-17, the machine learning, RBF and Gaussian is well known in the art [see paragraph 0038-0041 of the instant application], and therefore, examiner takes an Official Notice. Therefore, it would have been obvious to ordinary skilled in the art at the time of invention to simply use the well-known features to find the image quality.

3. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luo (US 7068841) in view of Reversible integer to integer wavelet transform for image compression; performance evaluation and analysis, by Adams et al.

With respect to claim 9, Luo discloses the invention substantially as disclose and as describe above in rejection 1. However, he fails to disclose the image quality space is spectral feature describing respective spatial frequency characteristics, as claimed.

Adams teaches image quality space is spectral feature describing respective spatial frequency characteristics, (see section II and IV) as claimed. The two references are combinable as they are analogous and the instant application does call for the reference [Adams] in their specification to be incorporated as reference, this is as good of the motivation as needed.

With respect to claims 10 and 11, Adams further teaches decomposing the target object region into multiple wavelet transform sub-bands, and each spectral feature describes energy in a respective wavelet transform sub-band, (see section II, IV and V)

4. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luo (US 7068841) in view of Image quality measurement based on statistics of activity regions, by Chen et al.

With respect to claim 12, Luo discloses the invention substantially as disclose and as describe above in rejection 1. However, he fails to disclose image quality feature space is noise feature describing a respective noise characteristic of the target object region, as claimed. Chen teaches image quality feature space is noise feature describing a respective noise characteristic of the target object region, (see page 380, col. 1, section 1, Activity Regions, the spatial frequency of the region read as the "noise") as claimed. It would have been obvious to one ordinary skilled in the art at the time of invention to combine the two references, as they are analogous because they are solving the similar problem of image quality measurements. The reference of Luo does suggest Noise as another issue for signal factor in the tone mapping, this is the motivation for combining the two references.

With respect to claims 13 and 14, Chen further teaches a noise feature is computed based on a measure of noise in the target object region, and a noise feature is computed based on a measure of spatial homogeneity of spectral features each

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describing a respective spatial frequency characteristic of the target mage region, (see page 381 section 3 Statistics of computed scores) as claimed.

Claims 18-36 are rejected for the same reasons as set forth in the rejection of claims 1-17, because claims 18-36 are claiming similar subject matter as claims 1-17.

Claim 1 = claims 18, 31, 32 and 33

Claim 2 = claim 19 and 34

Claim 4 = claim 20

Claim 8 = claim 21 and 35

Claims 9 = claim 22 and 36

Claims 10-17 = claims 23-30.

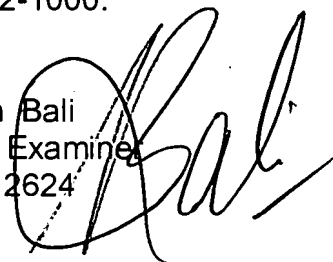
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikkram Bali whose telephone number is 571.272.7415. The examiner can normally be reached on 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen Lillis can be reached on 571.272.6928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vikkram Bali  
Primary Examiner  
Art Unit 2624

A handwritten signature in black ink, appearing to read 'Vikram Bali', is written over the printed name and title.

vb  
April 24, 2007